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ABSTRACT

A detailed analysis of nouns derived from Noun + Noun structures in the African language Yoruba is presented. These nouns are categorized into two types: compound and phrasal nouns. Assuming some of the basic principles of lexical phonology, it is argued that compound nouns should be derived in the lexicon, while phrasal nouns are derived in the syntactic component. Previous analyses and their shortcomings are also discussed, and two types of compounding are proposed. Contains 25 references. (Author/LB)

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LEXICAL AND PHRASAL PHONOLOGY OF YORUBA NOUNS

Antonia Y. Fọlarin

Abstract: This paper deals with a detailed analysis of nouns derived from Noun+Noun structures. These nouns are categorized into two types: Compound and Phrasal nouns. Assuming some of the basic principles of Lexical Phonology, it is argued that compound nouns should be derived in the lexicon, while phrasal nouns are derived in the syntactic component. Two types of compounding are also proposed.

Introduction

Derived nouns (i.e., polymorphemic nouns) in Yoruba can be subdivided into different categories. Some are derived by adding a prefix to a verb or a verb phrase, or by reduplicating the verb. In addition, some are derived from Noun+Noun structures. This paper focuses on the derivation of the latter types. It proposes a solution to the problems associated with the analysis of nouns derived from Noun+Noun structures (henceforth N+N structures). Previous analyses and their shortcomings are also discussed.

Problem

There are about five different types of N+N structures in Yoruba. Each type is exemplified below:

(1)	a.	ilé	+	tẹ́tẹ́	-->	iléetẹ́tẹ́
		'house'		'gambling'		'house of gambling'
	b.	apá	+	Dàda	-->	apáaDàda
		'arm'		'name of a person'		'Dada's arm'
	c.	orí	+	Táíwò	-->	oríiTáíwò
		'head'		'name of a person'		'Taiwo's head'
(2)	a.	ọmọ	+	obìrin	-->	ọmoobìrin
		'child'		'woman'		'woman's child'

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	b.	ẹbá	+	odò	-->	ẹbóodò
		'near'		'river'		'near the river'
	c.	ilé	+	Ẹbùn	-->	ilẹ́Ẹbùn
		'house'		'person's name'		'Ebun's house'
(3)	a.	iwé	+	ilé	-->	iwéelé
		'book'		'house'		'tax receipt'
	b.	arà	+	ilú	-->	arààlú
		'someone'		'town'		'someone from the town'
	c.	ilé	+	iwé	-->	iléèwé
		'house'		'book'		'school'
(4)	a.	ọmọ	+	obirin	-->	ọmọbirin
		'child'		'woman'		'girl'
	b.	ojú	+	òde	-->	ojúde
		'eyes/face'		'outside'		'open space'
	c.	idí	+	ọkọ̀	-->	idíkọ̀
		'bottom'		'vehicle'		'motor park'
(5)	a.	ọgbó	+	ẹni	-->	ọgbẹ́ni
		'elder'		'person'		'Mr'
	b.	ọmọ	+	idan	-->	omidan
		'child'		'virgin'		'Miss'
	c.	ilú	+	ètò	-->	iletò
		'town'		'arrangement'		'hamlet'

The division into types is based on the different phonological rules undergone by each of these subgroups. For example, the N+N constructions in (1) undergo the rule of vowel insertion which is formalized below in (6).

(6) Vowel Insertion Rule

$$\emptyset \rightarrow \underset{[\alpha F]}{V} \; / \; \underset{[\alpha F]\ N}{V\ ]} \text{ --- } \underset{N}{[-syl]}$$

The rule in (6) states that a vowel which is identical to the final vowel of the first noun is inserted between

two nouns, if the second noun begins with a consonant. On the other hand, the structures in (2-5) undergo the rules formalized in (7-10) respectively.

(7) Regressive assimilation

$$V_1 \text{ --> } V_2 \text{ / } \text{---}]_N \; N[\, V_{2\,[-\text{high}]}$$

Rule (7) states that the final vowel of the first noun becomes assimilated to the initial vowel of the second, if the initial vowel of the second noun is [-High]

(8) /i/ Assimilation rule

$$/i/ \text{ --> } [\alpha F] \text{ / } \begin{matrix} V \\ [\alpha F] \end{matrix}\Big]_N \; \Big[_N \text{---}$$

The above rule states that a vowel /i/ becomes assimilated to the entire features of a preceding vowel in a N+N structure.

(9) V_2 Deletion rule

$$V_2 \text{ --> } \emptyset \text{ / } V_1]_N \; [_N \text{---}$$

Rule (9) states that the initial vowel of the second noun is deleted in a N+N structure, when the first noun ends with a vowel.

(10) V_1 Deletion rule

$$V_1 \text{ --> } \emptyset \text{ / } \text{---}]_N \; [_N V_2$$

In the above rule, the final vowel of the first noun is deleted when the second noun in a N+N structure begins with a vowel.

Rule (6) only applies to the N+N structures in (1), since there is no other type of N+N structures where N_2 begins with a consonant. The problem, however, lies with the N+N structures in (2-5) and each of the applicable rules in (7-10). In order to derive the correct outputs in (2-5), rules (7), (8), (9), and (10) must apply respectively to the structures in (2), (3), (4), and (5). Nevertheless, it is observed that each of the rules in (7-10) is applicable to <u>any</u> of the structures in (2-5). There is no device that blocks the V_1 dele-

tion rule, for instance, from applying to the wrong structures in (4). Similarly, the structural description of rule (7) is also met by the N+N structures in (4). The question is, "how can we constrain each of the rules in (7-10) from applying to the wrong structures in (2-5)?"

A solution based on the use of boundary symbols, as proposed in Chomsky and Halle (1968), will run afoul in this case because each of the structures in (2-5) will have an identical underlying representation schematized below.

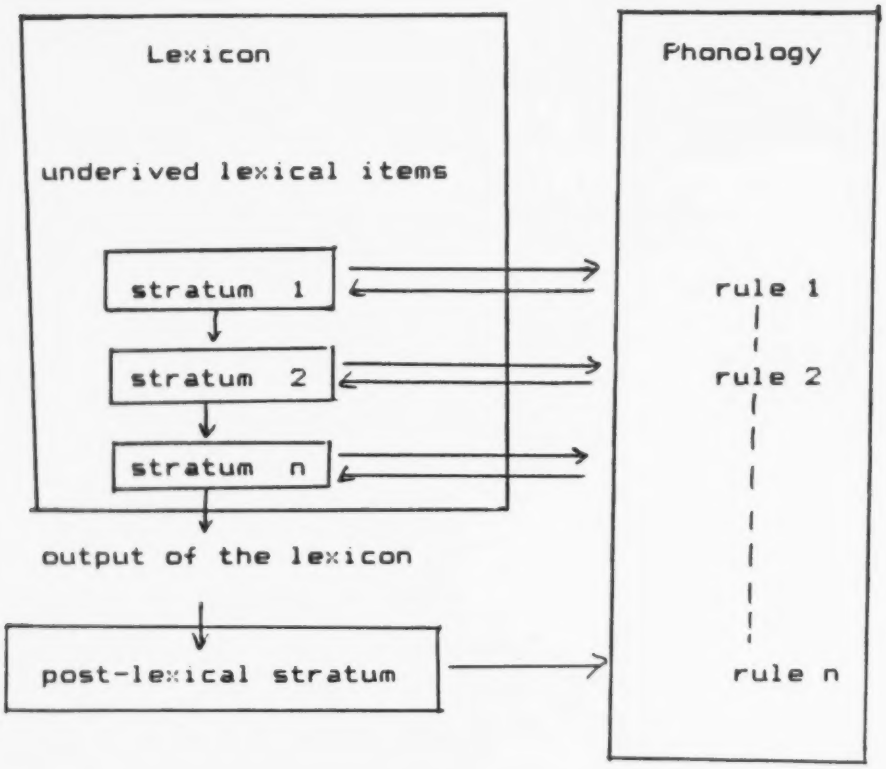
(11) # N ## N #

A way out of the above problem is to assume a different boundary symbol for each of the structures in (2-5). Such a solution will be ad hoc, since there will be no limit to the number of symbols that can be set up[1]. In this analysis, I will be assuming a theory of phonology that does not incorporate the use of boundary symbols.

Theoretical Background

In order to account for the problem mentioned above, I will adopt the theoretical framework of Lexical Phonology proposed in Kiparsky (1982 and 1983a and b), Mohanan (1982 and 1986), Pulleyblank (1983 and 1986), and Halle and Mohanan (1985). The model of the theory as presented in Pulleyblank (1983) and Archangeli (1984) is as follows:

(12) The Model of Lexical Phonology



The assumptions of this theory relevant to the analysis here are as follows:

a. Lexical and Post-Lexical Application of Rules.

Central to the theory of Lexical Phonology is the recognition of two types of rule applications, rather than two types of rules. Applications of rules are distinguished in regard to the domain of their operation. A rule may apply in the lexical domain (i.e., in the lexicon), in the post-lexical domain (i.e., in the syntactic component), or in both. The application of a phonological rule in the lexical domain or module is referred to as lexical rule application, while the application in the post-lexical domain is referred to as post-lexical rule application. Notice, however, that there is no distinction between lexical rules and post-lexical rules, since the same rule may apply in both domains.

For example, the palatalization rule which applies in the derivation of facial [feš̆əl] from face [fes] is

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said to be applying lexically while the same rule functions post-lexically in the derivation of [æžyu] from as you.

As pointed out in Pulleyblank (1983), this division is a result of the different properties manifested by these two distinct types of rule applications. In other words, there is a single set of phonological rules, but any of these rules may be lexical, post-lexical or both. If a single rule applies both lexically and post-lexically, however, it will manifest different properties in the two applications.

For example, Mohanan (1982) shows that no rule which applies lexically is blocked by an intervening pause. On the other hand, the same rule which applies post-lexically can be blocked by the presence of a pause. The rule of palatalization in English is used below to illustrate the different properties manifested by a rule which applies both lexically and post-lexically.

(13) Application of the rule of palatalization before the assignment of a pause

i. racial /rēy + yæl/ --> [rēyšal] (Lexical application)

ii. miss you /mɪs + yu/ --> [mɪšya] (Post-lexical application)

(14) Application of the rule of palatalization after the assignment of a pause

i. racial [rēy .... šal] *[rēys....al]

ii. miss you [mɪs .... ya] *[mɪš....ya]

The examples in (13) show that the rule of palatalization in English applies both lexically and post-lexically. Nevertheless, example (14ii) illustrates that the rule is blocked by an intervening pause when it applies post-lexically, while such blocking is impossible in (14i) where the rule applies lexically. What is important, however, is rule applications as opposed to rules themselves.

b. The Stratum Ordering

During the early stage of generative grammar, the lexicon was seen as an unstructured collection of whatever was idiosyncratic and unpredictable. Thus, little or no attention was paid to the nature of the lexicon.

Whatever was regular and deserved linguists' attention was relegated to the non-lexical components of syntax and phonology.

However, Lexical Phonology, following Siegel (1974) and Allen (1978), adopts the notion that the lexicon consists of ordered strata (or levels). Expanding Siegel and Allen's claim that a stratum consists of a set of affixes, Mohanan and Mohanan (1984:576) propose that "the lexicon contains a set of morphological rules of affixation or compounding and that these rules are specified for their domain of application in terms of lexical strata." In other words, contrary to Siegel (1974), affixes, e.g., class 1 and 2, are <u>not</u> listed in stratum 1 and stratum 2 respectively. Rather, all morphemes, including affixes, are listed at one place in the grammar (the morpheme list). For any morpheme to exit the lexicon, it has to pass through all the lexical strata. The morphological rules that attach affixes to stems will be specified for their domain of application in terms of lexical strata. For example:

(15) in- (prefix), domain: stratum 1

un- (prefix), domain: stratum 2

It is also assumed that the domains of phonological rules are characterized in terms of these strata. For example:

(16) Trisyllabic shortening, domain: stratum 1

Word stress rule, domain: stratum 1

Hence the output of a word-formation stratum is mapped onto the phonological rules assigned to the relevant stratum in the lexicon.

In what follows, I will demonstrate how the above principles help solve the problem of N+N structures in Yoruba.

<u>The analysis</u>

To begin with, I assume that there are two different types of nouns derived from N+N structures in Yoruba: Compound nouns and Phrasal nouns. The compound nouns are derived in the lexical strata (i.e., the lexicon), while the phrasal nouns are derived in the post-lexical stratum (i.e., the syntactic component). The phonological rules which apply in the derivation of

the compound nouns are applied in the lexicon. Such application is termed "lexical application". On the other hand, the rules which apply in the derivation of the phrasal nouns are applied in the post-lexical domain. This type of application is referred to as "post-lexical application".

By the above, I am implying that the derivations in (1-3) take place in the syntactic component, since the outputs are phrasal nouns. On the other hand, the derivations in (4-5) take place in the lexicon, since the outputs are compound nouns.

Motivations for Separating Phrasal Nouns from Compound Nouns

Similar to the analysis of Yoruba phrasal and compound verbs in Chapter 4 of Fọlarin (1987), there are also semantic and syntactic motivations for separating the domains of derivation of Yoruba compound nouns from those of phrasal nouns. However, contrary to the case of phrasal and compound verbs, there are also phonological reasons for separating the domains of derivation of these two different types of noun. In the following subsections, I will discuss each of these motivations.

Semantic Motivations

I assume that compound nouns should be listed as a subset of the words in the lexicon, since the meanings of compound nouns are not derived on the basis of the meaning of their constituents. On the other hand, phrasal nouns should be derived in the syntactic component. These do not need to be listed in the lexicon since their meanings are predictable and regular.

Compare, for example, the meanings of the compound nouns in (17) with those of the phrasal nouns in (18) below.

(17) Compound nouns

ọgbẹ̀ni	<--	ọ̀gbó	+	ẹ̀ni	
'Mr.'		'elder'		'person'	
omidan	<--	ọmọ	+	idan	
'Miss'		'child'		'virgin'	
ìletò	<--	ìlú	+	ètò	
'village'		'town'		'arrangement'	

(18) Phrasal nouns

aróoko	<--	ara	+	oko	
'someone from the farm'		'someone'		'farm'	
ọmoobirin	<--	ọmọ	+	obirin	
'woman's child'		'child'		'woman'	
ilẹẹbùn	<--	ilé	+	Ẹbùn	
'Ebun's house'		'house'		'name of a person'	

The compound nouns in (17) can be said to be "semantically lexicalized" or frozen (cf. Bauer 1983:55). In other words, they lack "semantic compositionality" (see Aronoff 1976). Bauer (1983), in his description of English compounds, identifies such componds as "exocentric" or bahuvrihi compound, using Sanskrit terminology. Exocentric compounds are said to be hyponyms of some unexpressed semantic head, and they are usually seen as metaphorical or synecdochic.

Similar examples in English are "redskin" and "highbrow". Notice that "redskin" is not a type of skin, nor is "highbrow" a type of brow.

In contrast to the lexicalized meanings in (17), the meanings of the phrasal nouns in (18) can be derived on the basis of the meanings of their components. Therefore, semantically, the compound nouns should be separated from phrasal nouns.

Syntactic Motivation

A very close observation of the data in (1-3) reveals that the second noun in the N+N constructions regularly functions as the modifier of the first noun. One example from each of the sets in (1-3) is repeated below.

(19) a. ilé + tẹtẹ --> ileetẹtẹ
'house' 'gambling' 'house of gambling'

b. ara + oko --> aróoko
'someone' 'farm' 'someone from the farm'

c. agbo + ilé --> agboolé
'yard' 'house' 'house yard'

In all the examples in (19a-c), the second noun always modifies the first noun. On the other hand, it is not always easy to decide which noun modifies the other in the formation of compound nouns. Some examples from (4) and (5) are also repeated below for illustration.

(20) a. ọ́gbó + ẹ̀ni --> ọ̀gbẹ̀ni
'elder' 'person' 'Mr.'

b. ọmọ + ìdan --> omidan
'child' 'virgin' 'Miss'

c. ojú + òde --> ojúde
'eyes/face' 'outside' 'open space'

d. ọmọ + obìrin --> ọmọbìrin
'child' 'woman' 'girl'

In (20c) one can assume that the first noun functions as a modifier of the second noun. In (20d), both nouns (i.e., ọmọ + obìrin) can be said to be separate heads, since the word "girl" is derived from the combination of "child" and "woman". However, in (20a-b), it is not easy to determine which noun modifies the other.

If the underlying structures of both phrasal and compound nouns function differently syntactically, one should assume that the domains of derivation of both phrasal and compound nouns must be different.

Another syntactic motivation for separating the domain of derivation of compound and phrasal nouns is in regard to the relative clause marker "ti" in Yoruba. For instance, the two nouns in phrasal constructions can be interrupted by a relative clause marker "ti" while such interruption is not allowed with compound nouns. This observation is illustrated below.

(21) Phrasal nouns

	I			II		
a.	ilé + Dàda	-->	ilée	ti	Dàda
	'house' 'name of a person'		'house	of	Dada'
b.	ará + oko	-->	aráa	ti	oko
	'someone' 'farm'		'someone of the farm'		
c.	ọmọ + obìrin	-->	ọmọọ	ti	obìrin
	'child' 'woman'		'child	of the woman'	

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(22) Compound nouns

	I				II	
a.	ọ́gbó	+	ẹ̀ni	-->	ọ̀gbẹ̀ni	*ọ́gbó ti ẹ̀ni
	'elder'		'someone'		'Mr.'	
b.	ọmọ	+	ìdan	-->	omìdan	*ọmọ ti ìdan
	'child'		'virgin'		'Miss'	
c.	ojú	+	òde	-->	ojúde	*ojú ti òde
	'eyes'		'outside'		'open space'	

The illustrations in (21) and (22) above show that the N+N structures that derive phrasal nouns can be interrupted with a relative clause marker, while those of the compound nouns cannot be interrupted. This shows that compound nouns function as single words, while phrasal nouns can function as two separate nouns.

Another point to support the above observation is that, whenever a compound noun takes a modifier, the modifier modifies the whole noun as a single lexical item. On the other hand, a modifier can modify the second noun in a phrasal noun without modifying the first noun in the phrase. For example,

(23)	I				II			III
a.	ilé	+	Dàda	-->	ilée Dàda	-->	ilée Dàda kúkúrú	
	'house'				'Dada's house'		'short'	
							"house of Dada who is short"	
b.	ará	+	oko	-->	aróoko	-->	aróoko ẹgàn	
	'someone'		'farm'		'someone from the farm'		'bushy'	
							"someone from a bushy farm"	
c.	ọmọ	+	obìrin	-->	ọmọobìrin	-->	ọmọobìrin gíga	
	'child'		'woman'		'woman's child'		'tall'	
							"the child of the tall woman"	

(24)	I				II			III
a.	ọmọ	+	obìrin	-->	ọmọbìrin	-->	ọmọbìrin gíga	
	child		woman		'girl'		'tall girl'	

b. ọmọ + ìdan --> omidan --> omidan Fọlárin
'child' 'virgin' 'Miss" 'Miss Fọlárin'

c. ojú + ode --> ojúde --> ojúde ọba
'eyes' 'outside' 'open space' 'king's open space'

In (23), even after the application of phonological rules in column II, the modifiers (which occur after the phrasal nouns in column III) modify only the second noun in the phrase (i.e., the second noun in column I). However, in (24), the modifier placed after a compound noun in column III modifies the noun as a single word.

The examples in (21-24) above show that, syntactically, phrasal nouns function as two separate words, while compound nouns function as single nouns. On the basis of these syntactic differences between phrasal and compound nouns, one is justified in separating their domains of derivation.

Phonological Motivation

As mentioned above, each of the five groups of N+N constructions in (1-5) undergoes a different phonological rule. Those in (1) undergo a vowel insertion rule while those in (2) and (3) undergo a regressive assimilation rule and an /i/ assimilation rule, respectively. Similarly, the structures in (4) undergo a V_2 deletion rule while those in (5) undergo a V_1 deletion rule.

Recall that the application of the vowel insertion, regressive assimilation, and /i/ assimilation rules to the constructions on the left side of the arrow in (1-3) results in phrasal nouns, while the application of the vowel deletion rules generates compound nouns. Since phrasal nouns are derived in the syntactic component (after all syntactic rules have applied), the phonological rules applicable in their derivation should be specified to apply post-lexically. Similarly, the vowel deletion rules applicable in the derivation of compound nouns should also be specified for application in the lexical strata, since compound nouns are derived in the lexicon.

Such specifications are shown as follows in Table 1.

Rules	Stratum 1	Stratum 2	Post-lexical stratum
Vowel Insertion			X (6)
Regressive Assimilation			X (7)
/i/ Assimilation			X (8)
V_2 Deletion	X (9)		
V_1 Deletion		X (10)	

Table 1: A table showing the five phonological rules discussed above and their specified domain of application. X marks the stratum in which the rule applies, while the parentheses refer to the number of the rule in the text.

If each rule is specified for its domain of application, the vowel deletion rules will be blocked from applying to phrasal structures, while the assimilation rules will also be blocked in the derivation of compound nouns.

Any theory that does not separate lexical application of rules from post-lexical application will have to devise an ad hoc means of blocking rules (7) and (8) from applying to the constructions in (4) and (5). Recall that all the structures in (2-5) have identical enviroments.

If all phonological rules are only applied in the syntactic component, after all morphological and syntactic rules have applied, it will be difficult, for instance, to block a rule such as V_2 deletion (i.e., rule (9)) from applying wrongly to the constructions in (2), (3), and (5).

Lexical Phonology offers a principled way of blocking vowel assimilation rules (7) and (8) from applying in the derivation of compound nouns by assuming that rules should be allowed to apply lexically and post-lexically. In this way, compound nouns which have undergone lexical rules will no longer meet the structural descriptions of the vowel assimilation rules, which are post-lexically applied.

Having separated the domains of derivation of phrasal nouns (i.e., 1-3) from compound nouns (i.e., 4-5), one other question is how to block the V_1 deletion rule from applying to the constructions in (4), and V_2 deletion rule from applying in (5).

The adoption of the stratum theory of morphology by Lexical Phonology offers a way to account for this problem. The compound nouns are divided into two types: Type 1 compound nouns and Type 2 compound nouns. Type 1 compound nouns, which undergo the V_2 deletion rule, are derived in stratum 1. On the other hand, Type 2 compound nouns, which undergo the V_1 deletion rule, are derived in stratum 2. Recall that each rule is specified for its domain of application.

Therefore, the V_1 deletion rule, whose domain of application is stratum 2, cannot apply to forms in stratum 1. Similarly, the V_2 deletion rule, whose domain of application is stratum 1, cannot apply in stratum 2. In this way, both V_1 and V_2 deletion rules are blocked from applying to the wrong structures.

Any analysis that does not recognize the lexicon as consisting of a set of ordered strata will also have problems in accounting for these two types of compound nouns in Yoruba.

Aside from all the rules discussed above, there is also the vowel harmony rule which applies in the derivation of compound nouns, but fails to apply in the derivation of phrasal nouns even when its structural description is met. The vowel harmony rule is repeated below and a sample derivation of <u>ọ̀gbẹ́ni</u> "Mr." (a compound noun), and <u>ẹ̀bọ́ọdọ̀</u> "near the river" (a phrasal noun), illustrates the above observation.

(25) Vowel harmony Domain: Strata 1 and 2

$$V \rightarrow [-ATR] \;/\; [\text{---}\; C \;\; V_{[-ATR]}$$

(26) Derivation of <u>ọ̀gbẹ́ni</u> "Mr.":

[ọ̀gbọ́] [ẹni]	Stems
[ọ̀gbọ́][ẹni]	Compounding
[ọ̀gb'ẹni]	V_1 deletion
[ọ̀gbẹ́ni]	Tone relinking
[ọ̀gbẹ́ni]	Vowel harmony
ọ̀gbẹ́ni	Output

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(27) Derivation of ẹbóodò "near the river":

[ẹbá] [odò]	Stems
[ẹbá][odò]	Phrasal concatenation
[ẹbóodo]	Regressive assimilation
*[ẹbóodò]	Vowel harmony
ẹbóodò	Output

The derivation in (26) illustrates the applicability of the vowel harmony rule in the derivation of a compound noun. On the other hand, (27) illustrates the fact that the rule does not apply in the derivation of the phrasal noun despite the fact that its structural description was met. Therefore, in order to block the vowel harmony rule from applying to phrasal outputs, its domain of application must be specified as being lexical. If rules are not allowed to apply either lexically or post-lexically, the facts of phrasal nouns as opposed to compound nouns will be difficult to account for in Yoruba.

Similarity Between Phrasal and Compound Nouns

In spite of the semantic, syntactic, and phonological differences between phrasal nouns and compound nouns in Yoruba, it is, however, observed that both nouns can undergo an identical morphological process.

As shown in examples (28) and (29) below, both compound and phrasal nouns undergo the prefixation of oni-.

(28) Prefixation of oni- to phrasal nouns

a. ilẹ + tẹtẹ --> ilẹetẹtẹ --> onilẹetẹtẹ
'house' 'gambling' 'house of gambling' 'owner of the gambling house'

b. agbo + ilẹ --> agboolẹ --> alagboolẹ[2]
'yard' 'house' 'house yard' 'owner of the house yard'

(29) Prefixation of oni- to compound nouns

a. ẹran + oko --> ẹranko --> ẹlẹranko
'meat' 'farm' 'animal' 'owner of the animal'

b. ojú + ode --> ojúde --> olójúde
'eyes' 'outside' 'open space' 'owner of the open space'

It is a common phenomenon in Yoruba for phrasal units to undergo morphological processes. This, however, does not preclude the separation of the derivation of phrases from the derivation of single words, based on the criteria discussed in above.

Alternative Analyses of N+N Constructions

Introduction

Many scholars of Yoruba (e.g., Ward 1952, Rowlands 1954, Siertsema 1959. Awobuluyi 1964, Courtenay 1968, Oyelaran 1971, and Awoyale 1985) have attempted to account for the N+N constructions in Yoruba. Since Oyelaran and Awoyale's analyses have come closest to identifying the similarities and the differences in some of these constructions, I will briefly present their analyses below, and show why they are inadequate in accounting for all the facts of N+N structures in Yoruba.

Oyelaran's (1971) Analysis of N+N Constructions

Working within the framework of Transformational Generative Grammar (henceforth TGG), Oyelaran (1971) postulates the following underlying formal notation for an NP that is a N+N construction, in which DM stands for Determiner Marker.

(30) $\left[_{NP}\ N^{[X]}{}_{N} \quad DM \quad N^{[Y]}{}_{N}\ \right]_{NP}$

In other words, all the N+N constructions in (1-3) would have the underlying notation in (30). He further sets up the following deletion rule which "optionally deletes the DM before nouns with vowel initials" Oyelaran (1971:123).

(31) Determiner Marker Deletion (optional)

DM --> $\emptyset$ / [[+syl]

If the DM is not deleted, its surface specification will be as shown in (32) below:

(32) DM --> $\begin{bmatrix} +syl \\ \alpha_1\ F_1 \\ \vdots \\ \alpha_n\ F_n \\ -H \\ -L \end{bmatrix} / \begin{bmatrix} +syl \\ \alpha_1\ F_1 \\ \\ \\ \alpha_n\ F_n \\ +T_1 \end{bmatrix}_N \text{ --- } \begin{bmatrix} \\ \\ \\ \\ \\ \\ \end{bmatrix}_N$

Rule (32) states that DM assumes the f-features of the vowel final of the preceding noun.

The application of Oyelaran's rules to the phrasal nouns in (1a), (2b), and (3a) is illustrated in (33a, b, and c), respectively.

(33)

	I		II	III
	Underlying forms		Rule 31	Rule 32
a.	/ilẹ + DM + tẹtẹ́/	-->	---	[ilẹ́etẹtẹ́]
b.	/ẹ̀ba + DM + odò/	-->	[ẹ̀bá odò]	---
c.	/iwẹ́ + DM + ilẹ́/	-->	[iwẹ́ ilẹ́]	---

Notice that the outputs in column II (i.e., after the application of 31) differ from the correct outputs which are [ẹ̀bóodo] and [iwẹ́ẹlẹ́].

Oyelaran himself observed this discrepancy and proposed the application of a nontonal feature assimilation rule to the outputs of rule (31) (i.e., the forms in column II above). This assimilation rule is represented below in (34).

(34) Non Tonal Feature Assimilation

$$[+syl]_2 \longrightarrow \begin{bmatrix} \alpha_1 F_1 \\ \vdots \\ \alpha_n F_n \end{bmatrix} / \quad X \quad \begin{bmatrix} +syl \\ \alpha_1 F_1 \\ \vdots \\ \alpha_n F_n \end{bmatrix}_1 \text{---} \quad [-syl]$$

Condition: 1 is of a lower vowel height than 2. X may be empty.

The rule in (34) states that a higher vowel becomes assimilated to a preceding lower vowel. From the specification of rule (34), it is obvious that it only applies to the output of rule (31) in (33c) to derive [iwéelé], which is the correct output. Rule (34) fails, however, to account for the derivation of [ẹbóodò] from [ẹbá odò]. In other words, Oyelaran's rules in (31), (32), and (34) only account for the phrasal nouns in (1) and (3). The data in (2) are not accounted for.

As regards the compound nouns, no reference was made to the data in (5) which undergo a V_1 deletion rule. However, Oyelaran postulated an adjective derivation rule to account for the compound nouns in (4). The rule is represented below in (35).

(35) Adjective Derivation

$$[+syl] \longrightarrow \emptyset \; / \; Adj[\; N[\text{---}$$

Oyelaran's application of rule (35) is illustrated in (36).

(36)	Stems			Rule 32
a.	ọmọ + obirin	-->	ọmọ birin	
	'child' 'woman'		'girl'	
b.	ojú + òde	-->	ojú de	
	'eyes' 'outside'		'open space'	
c.	ìdí + ọkọ̀	-->	ìdí kọ̀	
	'bottom' 'vehicle'		'motor park'	
d.	orí + oko	-->	orí ko	
	'head' 'farm'		'hamlet'	

Notice that in (36), the outputs of rule (35) in column II are written as two separate words. One wonders why this is so, since the forms in column II function as single lexical items after the application of the vowel deletion rule (cf. Awoyale 1985 and Akinlabi and Oyebade 1986).

In addition, Oyelaran (1971:141) assumes that the second elements in column II of (36) are "derived adjectives". This assumption does not seem plausible for a number of reasons:

a. All adjectives in Yoruba can occur as individual lexical items that have independent meanings. For example,

(37) a. yíí 'this'

b. pupa 'red'

c. rere 'good'

d. mɎran 'another'

e. gíga 'tall'

f. keji 'second'

On the other hand, notice that the second items in column II of (36) have no meaning independent of the first item. They do not even exist as individual words in Yoruba. If those items are adjectives, as Oyelaran assumed, one would expect them to behave similar to other adjectives in the language.

b. In Yoruba, adjectives always modify the nouns they follow. For examples,

(38) iwé pupa "red book"
'book' 'red'

ọmọ rere "good child"
'child' 'good'

ile gíga "tall building"
'house' 'tall'

ọmọ keji "second child"
'child' 'second'

In (38), the second item always modifies the first items. On the other hand, since the second items in column II of (36) no longer represent independent lexical items, it is difficult to claim that they modify the first noun. All the forms in column II of (36) are represented as follows:

(39) a. ọmọbirin 'girl'

b. ojúde 'open space'

c. idíkọ 'motor park'

d. oríko 'hamlet'

If each of the items in (39) represents a single lexical item whose meaning has become lexicalized, as argued above, it then becomes difficult to decide which part of the word modifies the other. Notice that this argument does not necessarily apply to all languages. For example, in English, "red skin" has a lexicalized or metaphorical meaning. Nevertheless, one can still claim that "red" is an adjective which modifies "skin" syntactically. On the other hand, this claim will be rather difficult to make if, for example, in "red skin", the word "red" undergoes a hypothetical final /d/ deletion rule and the word becomes "reskin". Since "re" no longer exists as an independent word, it will be difficult if not impossible to claim that it still modifies "skin".

In general, the problem with Oyelaran's analysis seems to lie within the theory he employed. Recall that in TGG, all phonological rules are applied after all morphological and syntactic processes have taken place. Even if such a theory has a way of explaining the N+N structures in (1-3), there will still be problems in accounting for the difference between the data in (4) and (2) and (3) on one hand, and (4) and (5) on the other.

Awoyale's (1985) Analysis of N+N Constructions

Despite the fact that Awoyale did not work within any particular framework, he still identifies the differences and the similarities between phrasal and compound nouns.

His general observation as regards the N+N constructions is that the relationship between the two

nouns is that of a "head noun and a possessive qualifier" (Awoyale 1985:8).

Phonologically, however, his analysis is as follows:

a. For all the phrasal nouns in (2) and (3), he assumes a vowel assimilation rule as formalized below:

(40) Vowel Assimilation Rule

$$\begin{bmatrix} +\text{syll} \\ \alpha F \end{bmatrix} \rightarrow \begin{bmatrix} +\text{syll} \\ \beta F \end{bmatrix} \; / \; \text{---} \;]_{N} + \begin{bmatrix} +\text{syll} \\ \beta F \end{bmatrix}_{PQ}$$

In rule (40), the final vowel of a first noun assimilates to the initial vowel of the second noun in a N+N construction.

Observe that the rule in (40) is not applicable to the constructions in (3); therefore, he assumes that all the data in (3) are exceptions to the vowel assimilation rule in (37). These exceptions, however, were not accounted for.

As regards the compound nouns, Awoyale postulated the following contraction rule:

(41) Vowel Contraction Rule

$$\begin{bmatrix} +\text{syll} \\ \alpha F \end{bmatrix} \rightarrow \emptyset \; / \; \begin{bmatrix} +\text{syll} \\ \alpha F \end{bmatrix}_{N} + [\text{---}]_{PQ}$$

In rule (41), the initial vowel of the second noun is deleted in a N+N construction.

Observe that both the assimilation rule and the contraction rule in (40) and (41) respectively have identical structural descriptions. This being the case, either of these rules is applicable to all the data in (2-5).

Recall that the data in (2) and (3) only undergo vowel assimilation rules, while those of (4) and (5) only undergo vowel deletion rules. Since there is no device in Awoyale's analysis to block either (40) or (41) from applying to the wrong structures, it is obvious that these rules cannot account for all the facts of N+N constructions in the language.

Summary

The paper has demonstrated how the theory of Lexical Phonology can be fruitfully employed to account for the facts of N+N structures in Yoruba. The two major assumptions of Lexical Phonology that help account for these facts are: (a) the adoption of the stratum theory of morphology, and (b) the idea of lexical and post-lexical application of rules.

The first assumption offers a way to account for the difference between Type 1 compounding and Type 2 compounding. The second assumption, on the other hand, helps to account not only for the syntactic and semantic differences, but also for the phonological differences in compound and phrasal nouns. This was achieved by separating the domains of derivation of compound nouns from that of phrasal nouns. The rules that are involved in the derivation of compound nouns are applied lexically (i.e., in the lexicon), while those that are involved in the derivation of phrasal nouns are applied post-lexically.

Previous analyses that do not take the above assumptions into consideration were found to be inadequate to account for the all the facts of N+N constructions in Yoruba.

NOTES

1. See Rotemberg (1978) and Mohanan (1982) for other problems associated with boundary symbols.

2. Some phonological rules have applied to some of the examples in (28) and (29) to change <u>oní</u>- into <u>al</u>-, <u>olẹ́</u>- etc.

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